Two new species of *Wurmbea* (Colchicaceae or Liliaceae s. lat.) from south western Australia

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Abstract

Macfarlane, T.D. Two new species of *Wurmbea* (Colchicaceae or Liliaceae s. lat.) from south western Australia. Nuytsia 5(3): 407-413 (1986). *Wurmbea graniticola* T.D. Maclarlane and *W. murchisoniana* T.D. Macfarlane are described, illustrated and mapped.

Introduction

At the time of my revision of the Australian species of *Wurmbea* (Macfarlane 1980), available collections of the two species described here were inadequate for judging their taxonomic status. Thus they were cited at the end of my paper under "Unplaced specimens". As a result of my subsequent collections, and those of others, sufficient data have now accumulated to confirm both taxa as species. In the following formal descriptions, the format of my revision is used except for minor changes to wording. No new key or key supplement is provided here because a new taxonomic treatment of *Wurmbea* in Australia is in preparation for a forthcoming volume of the "Flora of Australia".

Species descriptions

Wurmbea graniticola T.D. Macfarlane, sp. nov. (Figure 1)

Folia plerumque bene separata. Scapi floribus 1-3 hermaphroditis vel interdum masculis. Perianthium pallide lilacinum nectariis albis vel cremeis vel pallide ad saturate roseis; segmenta brevius quam ad decimam partem longitudinis connata; nectaria plerumque ad $^2/_3$ a basi sita; nectaria per perianthii segmenta singula, fasciam transversalem margine proximali curvatam formantia. Stamina quam nectarium plerumque breviora.

Typus: Mt Cramphorne, 31° 49'S, 118° 43'E, SE of Muntadgin, Western Australia, 21 July 1984, *T.D. Macfarlane* 1360 (holo: PERTH; iso: CANB, K, MEL, NSW).

Plants 1.5-11 cm tall to top of inflorescence, usually less than 6 cm. *Corm* 4.5-9 cm below ground, c. 1 cm long. *Leaves* 3, blades usually well separated, occasionally close, especially of the lower 2; lowest leaf basal, usually not dilated at base, tapering, often sinuous, 0.4-2.6 mm wide at base, channelled on upper surface; middle leaf dilated at base, otherwise long and tapering; uppermost leaf dilated, often with a shorter to longer, narrow, tapering apical portion. *Flowers* 1-3 per plant, forming an open spike when more than 1, hermaphrodite or occasionally the uppermost flower, or the flower when solitary, male with a vestigial ovary. *Perianth* white or pale pinkish lilac with white, cream or faint to dark pink nectary, or perianth pale pinkish lilac with nectary similar or white to cream; segments 6, occasionally 7 in uppermost flowers, connate at base for less than $^1/_{10}$ of their length, linear and spreading below nectary, broadening and upcurved at about the nectary, 6.5-10.5 mm long, acute to obtuse at apex; *nectary* 1 per perianth-segment, usually situated

c. 2/3 from base of segment, occasionally 1/3-1/2 from base, consisting of a more or less inconspicuous somewhat raised band or ridge spanning the adaxial face of the segment, continuous or occasionally with a break at the midline of the segment, the proximal margin of the band or ridge clearly defined, upwardly convex, the distal margin usually indistinct, more or less straight. *Stamens* c. 1/2 as long as perianth, usually not reaching nectaries but occasionally exceeding them; anthers obloid, c. 1 mm long, red, versatile, dorsifixed slightly below the middle. *Ovary* angular, sharply delimited from the 3 free styles. Mature *capsules* and *seeds* not seen.

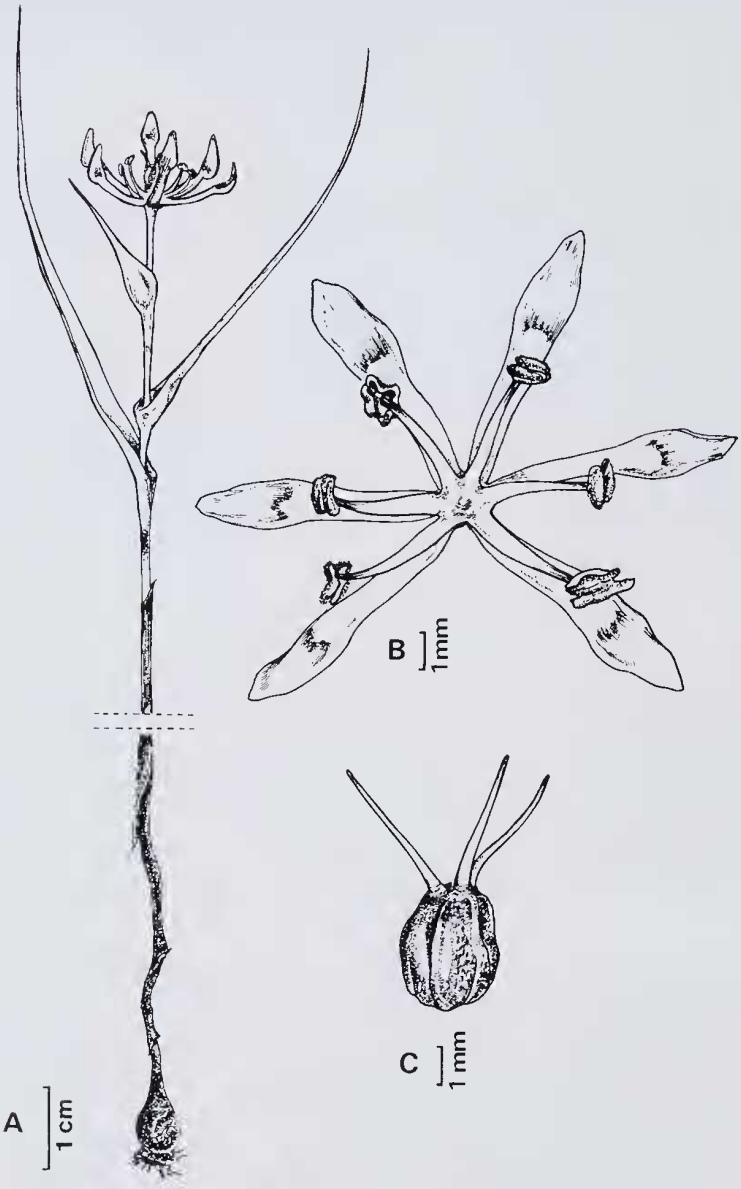

Figure 1. *Wurmbea graniticola*. A — Habit. B — Flower from above with gynoecium removed: nectaries depicted by shading just distal to anthers. C — Gynoecium.
Drawn by S. Bird from *T.D. Macfarlane* 1378.

Other specimens examined. WESTERN AUSTRALIA: Strawberry Rocks, 31° 27′S, 119° 17′E, 26 km S of Southern Cross on Southern Cross South Road, 5 Sept. 1984, *A. Brown* s.n. (PERTH); 9 miles [14.5 km] E of Boorabbin, Great Eastern Highway, 18 Sept. 1966, *A.S. George* 8066 (PERTH); Wattengutten Hill, 30° 58′S, 116° 59′E, ESE of Wongan Hills, 6 Sept. 1980, *A.S. George* 16192 (PERTH); 18 km E of Boorabbin along Great Eastern Highway, big outcrop 500 m S of road, 15 Aug. 1984, *S.D. Hopper* 3974 (CANB, PERTH); Boorabbin Rock, 31° 12′S, 120° 17′E, 15 Aug. 1984, *S.D. Hopper* 3981 (AD, BRI, CANB, K, MEL, NSW, PERTH); 9.5 km E along Muntadgin Road from Merredin-Narembeen road, 31° 43′S, 118° 30′E, SE of Merredin, 30 July 1982, *T.D. Macfarlane* 871 (PERTH); Mt Caroline, 31° 48′S, 117° 38′E, ca 20 km SSE of Kellerberrin, 20 July 1984, *T.D. Macfarlane* 1388 (PERTH); The Humps, 32° 19′S, 118° 57′E, near Hyden, 21 July 1984, *T.D. Macfarlane* 1367 (AD, BRI, PERTH); Wave Rock, 32° 27′S, 118° 54′E, near Hyden, 21 July 1984, *T.D. Macfarlane* 1368 (PERTH); Bushfire Rock, 32° 27′S, 119° 21′E, E of Hyden, 22 July 1984, *T.D. Macfarlane* 1374 (CBG, PERTH); Lily McCarthy Rock, 32° 41′S, 119° 21′E, SE of Hyden, 22 July 1984, *T.D. Macfarlane* 1378 (PERTH); 4.5 km SSE of Boorabbin (Boorabbin National Park), 27 Aug. 1981, *K. Newbey* 8688 (PERTH); Emu Rock, ca 51 km E of Hyden, 8 Oct. 1981, *K. Newbey* 9231 (PERTH); Hyden Rock, 13 Sept. 1983, *R. Ornduff* 9307-30 (PERTH); The Humps, near Hyden, 13 Sept. 1983, *R. Ornduff* 9309-13 (PERTH); Mt Cramphorne, E. of Muntadgin, 28 July 1963, *R.D. Royce* 7855 (PERTH).

Distribution. (Figure 3). *Wurmbea graniticola* occurs in Western Australia, at scattered localities in the central and eastern wheatbelt and slightly further east, from Wattengutten Hill eastward to Boorabbin and southward to Lily McCarthy Rock near Holt Rock. Although found on most rocks of high relief that were examined in its area of distribution, *W. graniticola* was not seen at Holt Rock or Mt Walker.

Habitat. Wurmbea graniticola grows in herbfields in shallow winter-wet patches of brown clay containing coarse granitic particles on and at the margins of high granite outcrops. It is absent from very low or ground-level rock exposures. *Wurmbea tenella* often occurs on the same rocks and flowers at the same time as does *W. graniticola,* but grows in separate, often closely adjacent and apparently deeper soil patches.

Flowering period. The species flowers mainly in July-September.

Discussion. In its most usual variant, *Wurmbea graniticola* is characterised by its scape having 1-3 flowers which are usually hermaphrodite but occasionally male, with nectaries positioned about $^2/_3$ from the base of the perianth segments, by the morphology of its nectaries, by its stamens not reaching the level of the nectaries, and by the shape of the flower and its coloration even though variable. This typical variant occurs at the majority of known localities including the type locality. At each of these localities, the individuals are relatively uniform although there can be variation in flower size and in coloration, especially of the nectaries (i.e. pale to dark pink) but flower colour varies much more between localities.

The populations at Mt Caroline and Strawberry Rocks and on some, but not all rocks in the vicinity of Boorabbin differ from the most common variant in having the nectaries lower on the segments (about $^1/_3$-$^1/_2$ from the base) and apparently more or less raised (for the full width or only at the sides), sometimes with a break at the middle, and in having the stamens equalling or exceeding the nectaries. Despite these differences the flower colour, shape and sex condition of these variants and their habitat and distribution all agree with those of the typical variant of the species. Extensive variation is in any case not surprising in a species that occurs as numerous isolated populations. The atypical variants are therefore here included in *W. graniticola.*

Wurmbea graniticola bears some resemblance to *W. dioica* (R.Br.) F. Muell. subsp. *alba* T.D. Macfarlane in being small pale-flowered plants with sometimes pale, continuous, transverse nectaries. This is especially evident in the variants mentioned above. Indeed I cited *A.S. George* 8066 under *W. dioica* subsp. *alba* in my 1980 account. However, *W. dioica* subsp. *alba* has pure white flowers (except for occasional plants in some populations which have pink nectaries) with nectaries located above 1/3 from the base of the perianth segments, which consist of a transverse band with well-defined distal as well as proximal margins, and a high proportion of male plants or plants with upper flowers male in its populations, and it occurs west of the range of *W. graniticola*. The more inland populations of *W. dioica* subsp. *alba*, being dioecious, with diminutive plants and exhibiting sexual dimorphy, are less like those of *W. graniticola* than the coastal plants are.

Etymology. The specific epithet refers to the occurrence of the species on granite outcrops.

Wurmbea murchisoniana T.D. Macfarlane, sp. nov. (Figure 2)

Folia bene separata. Scapi 1-7-flori, flores omnes hermaphroditi. Perianthium album nectariis albis; segmenta brevius quam ad decimam partem longitudinis connata; nectaria per perianthii segmentum bina, ad 1/3 basi sita, distincta, marginalia, prominentia, incrassata. Styli liberi vel ad quartam partem longitudinis connata.

Typus: 100-150 metres S of Murchison River Bridge on North West Coastal Highway, 27° 50′S, 114° 42′ E, Western Australia, 28 July 1982, *T.D. Macfarlane* 864 (holo: PERTH; iso: CANB).

Plants 10-26 cm tall to top of inflorescence. *Corm* not seen. *Leaves* 3, blades well separated; lowest leaf basal, slightly to markedly dilated at base, remainder long, narrow, tapering, 1-3.5 mm wide, channelled on upper surface; middle leaf dilated at base, remainder long, narrow, tapering; uppermost leaf dilated in basal portion, apical portion longer, narrow, tapering. *Flowers* 1-7 per scape, in an open spike when more than 1, all hermaphrodite. *Perianth* white with white nectaries; segments 6, narrow below nectaries, elliptical, ovate or broadly ovate above them, 7.5-11 mm long, connate at base for less than 1/10 of their length, acute or obtuse at apex; *nectaries* 2 per perianth segment, situated about 1/3 from base of segment, consisting of 2 well defined, marginal, ledge-like thickenings (sometimes appearing pouch-like when dried), not clasping the filament. *Stamens* c. 1/2 as long as perianth; filaments adnate to base of perianth segments, not swollen basally; anthers ellipsoidal, 0.8-1.5 mm long, versatile, dorsifixed at the middle, dark red. *Ovary* angular. *Styles* clearly delimited from the ovary, connate for up to 1/4 of their length or free. Mature *capsules* and *seeds* not seen.

Other specimens examined. WESTERN AUSTRALIA: Murchison River Bridge, 14 Aug. 1983, *A.C. Burns* 28 (PERTH); Murchison River [near bridge on North West Coastal Highway, *H. Demarz*, pers. comm.], 19 Aug. 1978, *H. Demarz* 6857 (PERTH); south side of Murchison River Bridge, North West Coastal Highway, *A.S. George* 11675, 18 July 1973 (PERTH).

Distribution. (Figure 3). This species is known only from the type locality close to the Murchison River.

Habitat. The type collection is from a highly restricted, dense population then growing in temporarily very wet red clay in a 15 metre long depression in otherwise flat terrain, which may be an old river terrace now above the river's flood level. Growing with the *Wurmbea* plants were perennial clump grasses, annual grasses and *Marsilea* sp. The surrounding vegetation was *Acacia* shrubland. Several other depressions containing

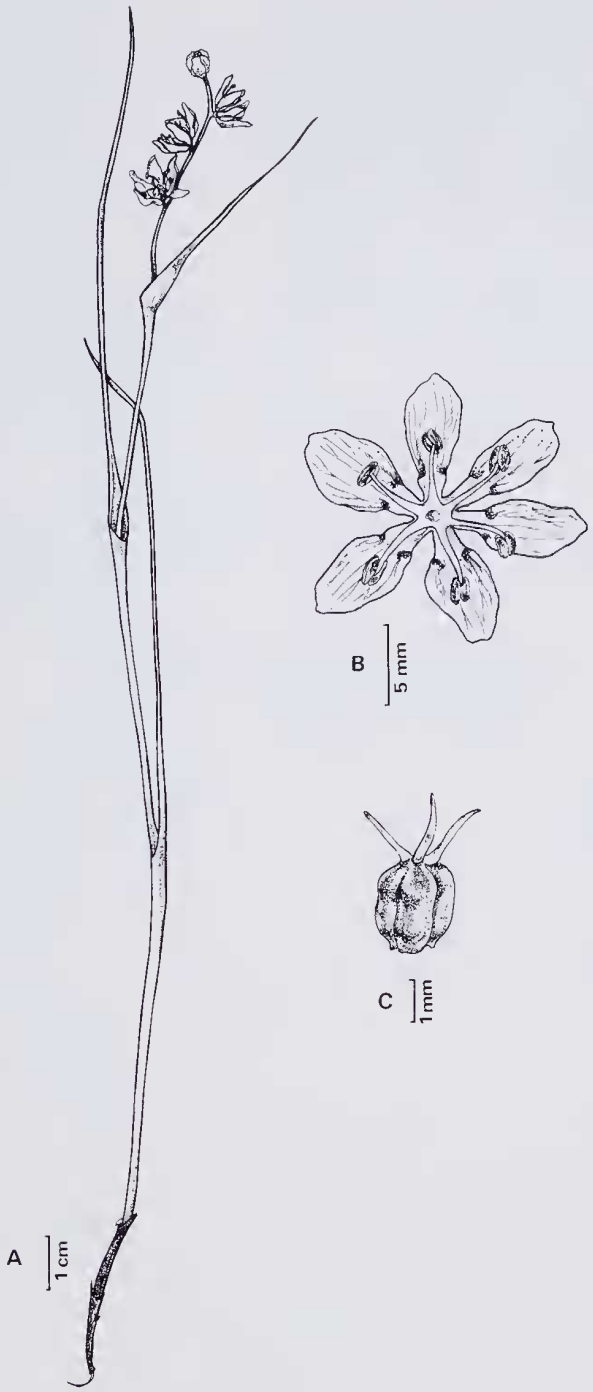

Figure 2. *Wurmbea murchisoniana*. A – Habit. B – Flower from above with gynoecium removed; nectaries depicted by stippling in lower part of each segment. C – Gynoecium.
A from *A.C. Burns* 28. B and C from *T.D. Macfarlane* 864, spirit material. Drawn by S. Bird.

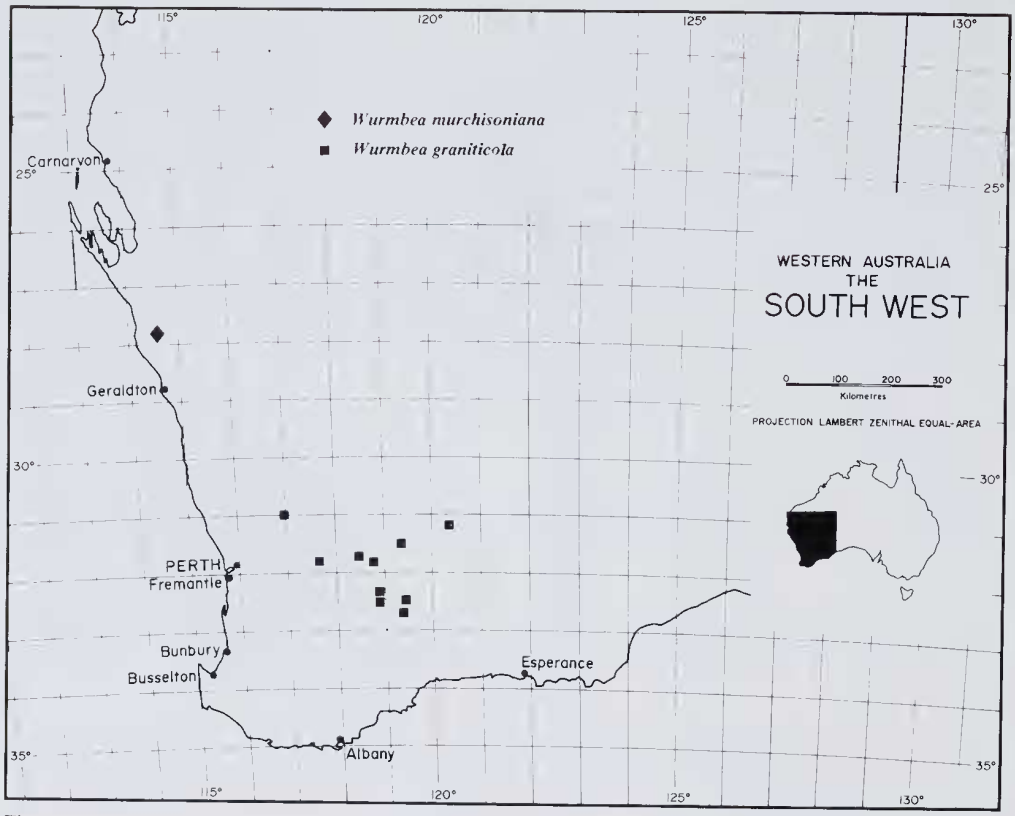

Figure 3. Distribution of *Wurmbea graniticola* and *W. murchisoniana*.

Wurmbea plants were seen in the vicinity. The labels of the other collections all mention wet or swampy conditions.

Discussion. Besides *Wurmbea murchisoniana*, several other species of *Wurmbea* have two nectaries per perianth segment and of these, the type variant of *W. centralis* T.D. Macfarlane seems to bear the greatest resemblance to *W. murchisoniana*. *Wurmbea centralis*, which grows in rocky habitats in South Australia and at The Olgas in the Northern Territory, has pink flowers with pink nectaries which clasp the filaments. *Wurmbea sinora* T.D. Macfarlane from the south coast of Western Australia has a flower colour similar to that of *W. murchisoniana* but its perianth segments and nectaries are differently shaped, its plants are much smaller, and they grow in different habitats. Such features also differentiate *W. murchisoniana* from the eastern Australian species *W. biglandulosa* (R.Br.) T.D. Macfarlane and *W. uniflora* (R.Br.) T.D. Macfarlane. From the Geraldton area southward, *W. dioica* (R.Br.) F. Muell. subsp. *alba* T.D. Macfarlane occupies shallow, seasonal, standing fresh-water pools like those in which *W. murchisoniana* grows further north at the Murchison River. *W. dioica* subsp. *alba* also grows in shallow soil on or near rock outcrops. This taxon has white flowers with white nectaries but the nectaries are usually present only as continuous transverse, thickened bands, although sometimes there is greater thickening towards the margins of the perianth segment, and occasionally also a slight unthickened, non-nectariferous area in the middle. There are, however, never two distinct nectaries with such a broad gap between them and with such well-defined proximal and inner margins as occur in *W. murchisoniana*. In addition, populations composed of completely hermaphrodite-flowered plants, as occur in *W. murchisoniana*, are not known in *W. dioica* subsp. *alba*.

The specimen *A.S. George* 11675, cited here under *W. murchisoniana*, was previously (Macfarlane 1980) considered to be conspecific with the specimen *A.S. George* 9538, collected at Deep Well, Bungabandi Creek, about 36 km NNW of the provenance of the former. I now consider *A.S. George* 9538 to be from a variant of *W. dilatata* T.D. Macfarlane, which shares with the typical variant its flower shape, extensive perianth fusion and enlarged filament bases. These characters, especially the latter two, differentiate it from *W. murchisoniana*. The Deep Well variant differs from typical *W. dilatata*, which has been collected 47 km away at Lake Culcurdoo, in having two distinct collateral nectaries per segment instead of one as a continuous band across the tepal.

Conservation status. Until further occurrences are discovered, possibly in similar seasonally wet places in river valleys in this area of Western Australia, this species must be classed as rare. Furthermore, in view of its position close to a bridge on a main road, it is vulnerable to development and road maintenance activities.

Etymology. The specific epithet refers to the occurrence of the species near the Murchison River.

Acknowledgements

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Reference

Macfarlane, T.D. (1980). A revision of *Wurmbea* (Liliaceae) in Australia. Brunonia 3: 145-208.